

REMARKS

Upon entry of the present amendment, claims 9 and 20 will be amended, so that claims 1-20 will remain pending.

By the amendment herein, the claims have been amended to even more explicitly recite the claimed subject matter as will be further discussed below.

Reconsideration of the rejections of record, and allowance of the application in view of the following remarks are respectfully requested.

Statement of Telephone Interview

Applicants express appreciation for the courtesies extended by Examiner Buie to Applicants' representative Arnold Turk during a February 23, 2009 telephone interview.

During the interview, the Examiner questioned whether the claims filed January 25, 2007 were the latest amendment of the claims. Applicants' representative confirmed that the January 25, 2007 Listing of Claims was the latest amendment of the claims.

Claim of Foreign Priority

Applicants express appreciation for the acknowledgement of the claim of foreign priority as well as receipt of the certified copy of the priority application in this national stage application.

Information Disclosure Statement

Applicants also express appreciation for the Examiner's confirmation of consideration of Applicants' Information Disclosure Statement filed January 25, 2008 by including an initialed copy the Form PTO-1449 submitted therewith with the Office Action.

Applicants are submitting on even date herewith a Supplemental Information Disclosure Statement to update the status of cited U.S. applications and to note the mailing of Office Actions in these applications.

Moreover, Applicants have provided English translations of DD 146716 and Lee (Item 11 on the Form PTO-1449) in Application No. 10/577,305, and are submitting copies of these translations with the Supplemental Information Disclosure Statement.

Therefore, the Examiner is requested to initial the Form PTO-1449 submitted with the Supplemental Information Disclosure Statement, and to include an initialed copy with the next communication from the Patent and Trademark Office.

Authorization is hereby provided to charge any fee necessary for consideration of the documents to Deposit Account No. 19-0089.

Moreover, Applicants note that the Examiner has indicated during a telephone interview in Application No. 10/577,305 that the Patent and Trademark Office will prepare an English translation of FR 2494702.

Response To Objections To Specification

The specification is objected to for including ellipsis (...) on pages 1 and 2. In response, the specification has been amended to remove the ellipsis.

The specification is also objected to for using abbreviations. Applicants have amended the specification to more explicitly provide the names of the abbreviations.

Accordingly, the objections should be withdrawn.

Response To Claim Objections

Claim 3 is objected to as being of improper dependent form for including the same subject matter as claim 1.

In response, Applicants submit that claim 3 further limits claim 1 by being directed to one of the two options recited in claim 1, i.e., radiation-chemically modified. Accordingly, claim 3 is a proper dependent claim by including all of the features of the parent claim and further define the parent claim.

Claims 9 and 20 are objected to for including abbreviations. In response, the claims have been amended to more explicitly include the names of the abbreviations.

Therefore, withdrawal of the claim objections is respectfully requested.

Response To Rejection Under 35 U.S.C. 112, Second Paragraph

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite, because the rejection questions as to what "other" co- and terpolymers are since said polymers are undefined.

In response, Applicants have amended claim 9 in a manner similar to claim 20, which claim is not rejected on this basis. Thus, one having ordinary skill in the art would readily understand that the claim includes homopolymers, copolymers or terpolymers of butadiene and/or isoprene. These can include, for example, "isobutene-isoprene rubber" (copolymer) or

"ethylene-propylene-butadiene polymer" (terpolymer) or ethylene-propylene-isoprene polymer" (terpolymer).

Accordingly, the 35 U.S.C. 112, second paragraph, rejection should be withdrawn.

Allowable Subject Matter

Applicants express appreciation for the indicated allowability of claims 10-20 over the prior art of record. However, for at least the reasons set forth below, each of the pending claims is allowable over the prior art of record, so that withdrawal of the rejections of record with the mailing of the Notices of Allowance and Allowability are respectfully requested.

Art Based and Double Patenting Rejections

Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishi et al. (JP 2002-338931 A (hereinafter JP '931), referring to the machine translation).

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamaoka (JP 620366431 (hereinafter JP '431), referring to the translation).

Claims 1 and 3-7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 of copending Application No. 10/577,305.

Claims 1 and 3 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 5 of copending Application No. 10/577,305 (apparently 10/577,300).

In response to these grounds of rejection, Applicants submit that the claims are not anticipated by either of JP '931 or JP '431, and the provisional nonstatutory obviousness-type

double patenting rejections are without appropriate basis, so that the rejections of record should be withdrawn.

Regarding the anticipation rejection of claims 1 – 7 based upon JP ‘931, Applicants submit that JP ‘931 does not disclose each and every feature recited in the claims whereby the rejection is without appropriate basis and should be withdrawn.

JP ‘931 discloses a bonding method for improving adhesion properties of a modified fluorescein to another member, while keeping improved wear-resistant properties as well as excellent heat resistance, chemical resistance, electrical characteristics, mechanical characteristics, anti-staining properties, or the like of the unmodified fluorescein. JP ‘931 discloses bonding modified fluororesin to a partner by subjecting the raw materials of the fluororesin to an ionizing radiation, the modification of the raw materials being carried out at temperatures from their melting point or higher, under an oxygen-containing atmosphere with a concentration of 100 torr (= 13.33 kPa) or less, and thereafter a sodium treatment is carried out. Subsequently, the bonding of a partner to the surface of the modified fluororesin is carried out via an elastic adhesive. Thus, JP ‘931 includes that the modification of the fluororesin is carried out by ionizing radiation at temperatures from the melting point of the raw materials of the initial substances or higher. To this end JP ‘931 discloses that PTFE has a melting point of 327°C.

It is clear that with this modification no more radicals can be present, if any have formed. This is known to one skilled in the art, for example, from the publication by Schierholz, K. et al., Journal of Polymer Science, Part 8, Polymer Physics, Vol. 37, 2404-2411 (1999), a copy of which is being submitted on even date herewith with the Supplemental Information Disclosure Statement. It is stated at page 2408, right column: “In general, the radicals are destroyed if the temperature is increased above a certain limit value, ...” Likewise, it can be seen on page 2409,

Fig. 8b that the proportion of radicals decreases substantially with increasing temperature. According to Fig. 8b, hardly any radicals are still present at a temperature of 220°C, and accordingly no more are present at all at above 327°C.

Therefore, according to JP '931 no radical coupling should occur between the fluororesin and the partner, and this is not disclosed in JP '931 nor can it be derived from JP '931.

Accordingly, JP '931 does not disclose, as recited in Applicants' independent claim 1 and further patentably defined in the dependent claims, a radically coupled polytetrafluoroethylene polymer compound comprising at least one of radiation-chemically and plasma-chemically modified polytetrafluoroethylene powder including a surface, and at least one olefinically unsaturated polymer chemically radically coupled on the surface via a reactive conversion into melt.

Regarding the anticipation rejection of claims 1 – 9 based upon JP '431, Applicants submit that JP '431 does not disclose each and every feature recited in the claims whereby the rejection is without appropriate basis and should be withdrawn.

According to JP '431, a fiber-reinforced elastomer is known which is produced from a mixture of an elastic material, such as rubber, as a base material and unsintered fine PTFE powder. This mixture is kneaded, extruded or similarly treated in a mixer to form fine fibers in the compound, in order to orient the fibers and is injected into a mold by hot pressing or the like, and then irradiated with ionizing radiation in order to improve the connection between the fibers and the elastomer matrix in a secondary cross-linking. Moreover, according to JP '431, the PTFE is not present as a powder when irradiated but in fiber form.

In contrast thereto, in the present solution the PTFE powder is treated radiation-chemically and/or plasma-chemically alone before the melt processing and only then converted

into a melt with an olefinically unsaturated polymer. JP '431 does not disclose a radically coupled polytetrafluoroethylene polymer compound comprising at least one of radiation-chemically and plasma-chemically modified polytetrafluoroethylene powder including a surface, and at least one olefinically unsaturated polymer chemically radically coupled on the surface via a reactive conversion into melt.

According to the present invention, it is necessary for the treatment of the PTFE powder to be carried out before the further processing, since otherwise, if the modification conditions according to JP' 431 were applied, no reactive perfluoroalkyl-(peroxy) radical centers could form in the amorphous areas of the boundary layer region of the PTFE fibers, which are necessary for the radical bonding to the polymer.

The radical centers that may possibly form slightly after all, however, will then not react with the matrix polymer under the conditions of JP '431 through steric screening and through the lack of thermal activation. In any case, there is no radical coupling of PTFE fibers and matrix in the solution according to JP '431, but a physical bond.

In addition, according to the solution of JP '431 a secondary cross-linking for strengthening the connection between the PTFE fibers and the elastomer is to be achieved via entanglement through the irradiation of the previously formed fiber-reinforced compound, and no chemically radical coupling between the PTFE fibers and the elastomer matrix is disclosed.

Accordingly, the anticipation rejection based upon JP '431 should be withdrawn.

Regarding the provisional obviousness-type double patenting rejections, Applicants submit that the rejections do not provide an adequate basis for supporting a rejection and should therefore be withdrawn.

According to Application No. 10/577,305, radically coupled PTFE polymer powders are claimed which comprise modified PTFE powders, to the particle surface of which homopolymers, copolymers or terpolymers are radically coupled. In contrast thereto, according to the presently claimed subject matter, modified PTFE powders are present to which olefinically unsaturated polymers are radically coupled. Accordingly, different products will be present, and the rejection has not provided any explanation as to why the claimed subject matter is obvious over claims 1-6 of Application No. 10/577,305.

According to Application No. 10/577,300, in addition to reactive perfluoroalkyl-(peroxy) radical centers, functional -COOH- and/or -COF groups are also present on the modified perfluoropolymers, which groups are included in the modification reaction so that, in addition to the radical reactions, substitution reactions and/or addition reactions also occur, which lead to different couplings and to different products. Again the rejection does not address the differences in the claims, and the rejection has not provided any explanation as to why the claimed subject matter is obvious over claim 5 of Application No. 10/577,305.

Therefore, if the double patenting rejections are repeated the Examiner is respectfully requested to specifically note each of the claims limitations in the rejection, and to address each of this limitation, such as the recited at least one olefinically unsaturated polymer chemically radically coupled on the surface via a reactive conversion into melt.

Accordingly, for at least the reasons set forth above, the rejection of record should be withdrawn.

CONCLUSION

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the objections and rejections of record, and allow each of the pending claims.

Applicants therefore respectfully request that an early indication of allowance of the application be indicated by the mailing of the Notices of Allowance and Allowability.

Should the Examiner have any questions regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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July 17, 2009
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